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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/824,332	04/02/2001	Jackson I. Ito	MAC-0113-US	9413

27810 7590 05/06/2002

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EXAMINER

RUDNICK, DOUGLAS W

ART UNIT	PAPER NUMBER
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1764

9

DATE MAILED: 05/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

11F=9

Office Action Summary	Application No. 09/824,332	Applicant(s) ITO ET AL.	
	Examiner Douglas W Rudnick	Art Unit 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 March 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-55 is/are pending in the application.
- 4a) Of the above claim(s) 26-36 and 54 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25, 37-53 and 55 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>6</u> | 6) <input type="checkbox"/> Other: |

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DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I. in Paper No. 8 is acknowledged. The traversal is on the ground(s) that there is no undue burden place on the examiner. This is not found persuasive because Applicants' fail to establish reason and detail for traversal. Reason for restriction was established by examiner in previous office action in Paper No. 5.

The requirement is still deemed proper and is therefore made FINAL.

Specification

2. The disclosure is objected to because of the following informalities: update of priority document 09/735779 is needed. Application 09/735779 is now U.S. Patent No. 6352639.

Appropriate correction is required.

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The title is directed toward a process when the invention is an apparatus.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 6-9, 13, 15, 16, 18, 39, 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Metrailler et al. (US 2952619).

With respect to claim 1:

Metrailler et al. discloses:

A central passageway (Fig. 2, 30)

At least one feed inlet (Fig. 1, 14)

An outlet (Fig. 2, 35)

At least one atomization fluid passageway (Fig. 2, 33)

A heating zone (Col. 2, lines 66-69)

The central passageway outlet is downstream from the atomization fluid passageway exit (Fig. 2, 34 and 35)

With respect to claim 2:

Metrailler et al. discloses:

A first mixing zone (Fig. 1, 11)

A first inlet (Fig. 1, 14)

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With respect to claim 3:

Metrailler et al. discloses:

A first mixing zone (Fig. 1, 11)

A second inlet (Fig. 1, 15)

The second inlet upstream from atomization fluid passageway outlet (Fig. 1)

With respect to claim 6:

Metrailler et al. discloses:

Atomization fluid passageway outlets have a forward angle greater than 60 degrees
(Fig. 2 and Col. 3, lines 3-5)

With respect to claim 7:

Metrailler et al. discloses:

Circular central passageway (Fig. 2, 30)

Atomization fluid passageways are positioned concentrically about the perimeter of the
central passageway (Fig. 2)

With respect to claim 8:

Metrailler et al. discloses:

Central passageway has a two dimension cross-section wherein at least one of the
dimensions converges downstream (Col. 3, lines 22-25)

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With respect to claim 9:

Metrailler et al. discloses:

Central passageway outlet (Fig. 2, 30) has an atomizing zone (Fig. 2, 35) downstream from the heating zone (Col. 2, lines 66-69)

With respect to claim 13:

Metrailler et al. discloses:

A central passageway configured to promote mixing (Fig 2, 32-37)

With respect to claim 15:

Metrailler et al. discloses:

A central passageway (Fig. 2, 30)

At least one feed inlet (Fig. 1, 14)

An atomization zone (Fig. 2, 35) downstream from feed inlet

At least one atomization fluid passageway (Fig. 2, 33)

Atomization fluid passageway outlets have a forward angle greater than 60 degrees (Fig. 2 and Col. 3, lines 3-5)

Atomization fluid passageways are positioned concentrically about the perimeter of the central passageway (Fig. 2)

A heating zone (Col. 2, lines 66-69) which is upstream from atomization zone (Fig. 2)

With respect to claim 16:

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Metrailler et al. discloses:

A second inlet (Fig. 1, 15) upstream from atomization fluid passageway outlet (Fig. 1)

With respect to claim 18:

Metrailler et al. discloses:

Central passageway has a two dimension cross-section wherein at least one of the dimensions converges downstream (Col. 3, lines 22-25)

With respect to claim 39:

Metrailler et al. discloses:

Central passageway has a two dimension cross-section wherein both of the dimensions converge downstream (Col. 3, lines 22-25)

With respect to claim 40:

Metrailler et al. discloses:

Central passageway has a two dimension cross-section wherein both of the dimensions converge downstream (Col. 3, lines 22-25)

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 4, 5, 10-12, 14, 17, 19-25, 37, 38, 41-50 are rejected under 35 U.S.C.

103(a) as being unpatentable over Metrailer et al. in view of Koveal et al. (US 6199768).

With respect to claims 4, 17, 22, and 43:

Metrailer et al. discloses the invention substantially as claimed. However, Metrailer et al. is silent to the second inlet comprising a sparger. Koveal et al. teaches a second inlet comprising a sparger (Fig. 7, 198) for the purpose of achieving better movement of the steam and oil mixture.

It would have been obvious to one of ordinary skill in the art at the time applicants' invention was made to have provided a second inlet comprising a sparger in Metrailer et al. in order to achieve better movement of the mixture as taught by Koveal et al.

With respect to claims 5 and 44:

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Metrailler et al. discloses the invention substantially as claimed. However, Metrailler et al. is silent to a stream splitter. Koveal et al. teaches a stream splitter (Fig. 5, 118) for the purpose of splitting the fluid flow into two identical streams.

It would have been obvious to one of ordinary skill in the art at the time applicants' invention was made to have provided a stream splitter in Metrailler et al. in order to split the fluid flow into two identical streams as taught by Koveal et al.

With respect to claim 10:

Metrailler et al. discloses the invention substantially as claimed. However, Metrailler et al. is silent to the atomizing zone comprising a spray distributor which has a fluid passageway extending therethrough. Koveal et al. teaches an atomizing zone comprising a spray distributor which has a fluid passageway extending therethrough (Fig. 7, 150) for the purpose of widely distributing the atomized fluid into the reactor.

It would have been obvious to one of ordinary skill in the art at the time applicants' invention was made to have provided an atomizing zone comprising a spray distributor in Metrailler et al. in order to widely distribute the atomized fluid into the reactor as taught by Koveal et al.

With respect to claims 11, 48, and 49:

Metrailler et al. discloses the invention substantially as claimed. However, Metrailler et al. is silent to the spray distributor fluid passageway having a two dimensional cross section wherein at least one dimension diverges. Koveal et al.

teaches a spray distributor fluid passageway having a two dimensional cross section wherein at least one dimension diverges (Fig. 4c) for the purpose of having a fan shape distribution of the atomized fluid.

It would have been obvious to one of ordinary skill in the art at the time applicants' invention was made to have provided a spray distributor fluid passageway having a two dimensional cross section wherein at least one dimension diverges in Metrailler et al. in order to have a fan shape distribution of the atomized fluid as taught by Koveal et al.

With respect to claim 12:

Metrailler et al. discloses the invention substantially as claimed. Metrailler et al. discloses a central passageway that has a two dimension cross-section wherein at least one of the dimensions converges downstream (Col. 3, lines 22-25). However, Metrailler et al. is silent to a spray distributor comprising a fluid passageway extending therethrough and having a diverging dimension of the two dimension cross section. Koveal et al. teaches a spray distributor comprising a fluid passageway extending therethrough (Fig. 7, 150) and having a diverging dimension of the two dimension cross section (Fig. 4c) for the purpose of having better distribution of the fluid.

It would have been obvious to one of ordinary skill in the art at the time applicants' invention was made to have provided a spray distributor comprising a fluid passageway extending therethrough and having a diverging dimension of the two

dimension cross section in Metrailer et al. in order to have better distribution of the fluid as taught by Koveal et al.

With respect to claims 14 and 19:

Metrailer et al. discloses the invention substantially as claimed. However, Metrailer et al. is silent to the atomization zone having a two dimension cross section with at least one of the dimensions converging downstream. Koveal et al. teaches an atomization zone having a two dimension cross section with at least one of the dimensions converging downstream (Fig. 5, 104) for the purpose of increasing velocity to promote more shearing of the two phase fluid.

It would have been obvious to one of ordinary skill in the art at the time applicants' invention was made to have provided an atomization zone having a two dimension cross section with at least one of the dimensions converging downstream in Metrailer et al. in order to increase velocity to promote more shearing of the two phase fluid as taught by Koveal et al.

With respect to claim 20:

Metrailer et al. discloses the invention substantially as claimed.

Metrailer et al. discloses:

A central passageway (Fig. 2, 30)

At least one feed inlet (Fig. 1, 14)

An atomization zone (Fig. 2, 35)

At least one atomization fluid passageway (Fig. 2, 33)

Atomization fluid passageway outlets have a forward angle greater than 60 degrees
(Fig. 2 and Col. 3, lines 3-5)

Atomization fluid passageways are positioned concentrically about the perimeter of the
central passageway (Fig. 2)

A heating zone (Col. 2, lines 66-69)

Central passageway has a two dimension cross-section wherein at least one of the
dimensions converges downstream (Col. 3, lines 22-25)

However, Metrailler et al. is silent to a stream splitter and an atomization zone
having a two dimension cross section with at least one of the dimensions diverging
downstream. Koveal et al. teaches a stream splitter and an atomization zone having a
two dimension cross section with at least one of the dimensions diverging downstream
for the purpose of splitting the fluid flow into two identical streams and promoting better
atomization of the fluid, respectively.

It would have been obvious to one of ordinary skill in the art at the time
applicants' invention was made to have provided a stream splitter and an atomization
zone having a two dimension cross section with at least one of the dimensions diverging
downstream in Metrailler et al. in order to split the fluid flow into two identical streams
and promote better atomization of the fluid, respectively as taught by Koveal et al.

With respect to claim 21:

Metrailler et al. discloses the invention substantially as claimed. Metrailler et al. discloses a second inlet for atomization fluid (Fig. 1, 15).

With respect to claim 23 and 37:

Metrailler et al. discloses the invention substantially as claimed. Metrailler et al. discloses a central passageway that has a two dimension cross-section wherein both of the dimensions converge downstream (Col. 3, lines 22-25).

With respect to claim 24:

Metrailler et al. discloses the invention substantially as claimed. Metrailler et al. discloses an atomizing zone downstream from the heating zone (Fig. 2, 35).

With respect to claims 25 and 50:

Metrailler et al. discloses the invention substantially as claimed. Metrailler et al. discloses a converging dimension of the central passageway (Col. 3, lines 22-25). However, Metrailler et al. is silent to a diverging dimension of a spray distributor. Koveal et al. teaches a diverging dimension of a spray distributor (Fig. 4c) for the purpose of having better distribution of the fluid.

It would have been obvious to one of ordinary skill in the art at the time applicants' invention was made to have provided a diverging dimension of a spray distributor in Metrailler et al., which when implemented would be co-planar with the

converging dimension of the central passageway, in order to have better distribution of the fluid as taught by Koveal et al.

With respect to claim 38:

Metrailler et al. discloses the invention substantially as claimed. Metrailler et al. discloses a plurality of feed nozzles (Col. 2, lines 55-57)

With respect to claim 41:

Metrailler et al. discloses the invention substantially as claimed.

Metrailler et al. discloses:

A central passageway (Fig. 2, 30)

At least one feed inlet (Fig. 1, 14)

An outlet (Fig. 2, 35)

At least one atomization fluid passageway (Fig. 2, 33)

A heating zone (Col. 2, lines 66-69)

However, Metrailler et al. is silent to a spray distributor. Koveal et al. teaches a spray distributor for the purpose of widely distributing the atomized fluid into the reactor.

It would have been obvious to one of ordinary skill in the art at the time applicants' invention was made to have provided a spray distributor in Metrailler et al. in order to widely distribute the atomized fluid into the reactor as taught by Koveal et al.

With respect to claim 42:

Metrailler et al. discloses the invention substantially as claimed. Metrailler et al. discloses a second inlet for an atomization fluid (Fig. 1, 15).

With respect to claim 45:

Metrailler et al. discloses the invention substantially as claimed. Metrailler et al. discloses atomization fluid passageway outlets having a forward angle greater than 60 degrees (Fig. 2 and Col. 3, lines 3-5).

With respect to claim 46:

Metrailler et al. discloses the invention substantially as claimed. Metrailler et al. discloses a circular central passageway (Fig. 2, 30) and atomization fluid passageways that are positioned concentrically about the perimeter of the central passageway (Fig. 2).

With respect to claim 47:

Metrailler et al. discloses the invention substantially as claimed. Metrailler et al. discloses a central passageway that has a two dimension cross-section wherein at least one of the dimensions converges downstream (Col. 3, lines 22-25).

9. Claims 51-53 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Metrailler et al. in view of Koveal et al., as applied to the claims above, and King et al. (US 5577668).

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With respect to claims 51-53 and 55:

The modified apparatus of Metrailler et al. discloses the invention substantially as claimed. However the modified apparatus of Metrailler et al. is silent to a sparger that allows the fluid to pass into the central passageway in a radial flow, axial flow, or combination of the two. King et al. teaches a sparger (Abstract) that distributes flow in an radial direction, axial direction or a combination of the two for the purpose of evenly distributing a fluid.

It would have been obvious to one of ordinary skill in the art at the time applicants' invention was made to have provided a sparger that allows the fluid to pass into the central passageway in a radial flow, axial flow, or combination of the two in the modified apparatus of Metrailler et al. in order to evenly distribute a fluid as taught by King et al.

Conclusion


10. The references US 5762486, US 5306418, and US 6174160 show state of the art.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas W. Rudnick whose telephone number is 703-305-3141. The examiner can normally be reached on M-F (8:30 am - 5:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marian Knode can be reached on 703-308-4311. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.


Douglas W. Rudnick
Art Unit 1764

dwr
April 23, 2002


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